



Volunteer Lake Assessment Program Individual Lake Reports

GARDNER, LAKE, BATH, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	141	Max. Depth (m):	4.7	Flushing Rate (yr ⁻¹)	0.8
Surface Area (Ac.):	25	Mean Depth (m):	2.6	P Retention Coef:	0.81
Shore Length (m):	1,100	Volume (m ³):	256,500	Elevation (ft):	665

TROPHIC CLASSIFICATION

Year	Trophic class
1985	OLIGOTROPHIC

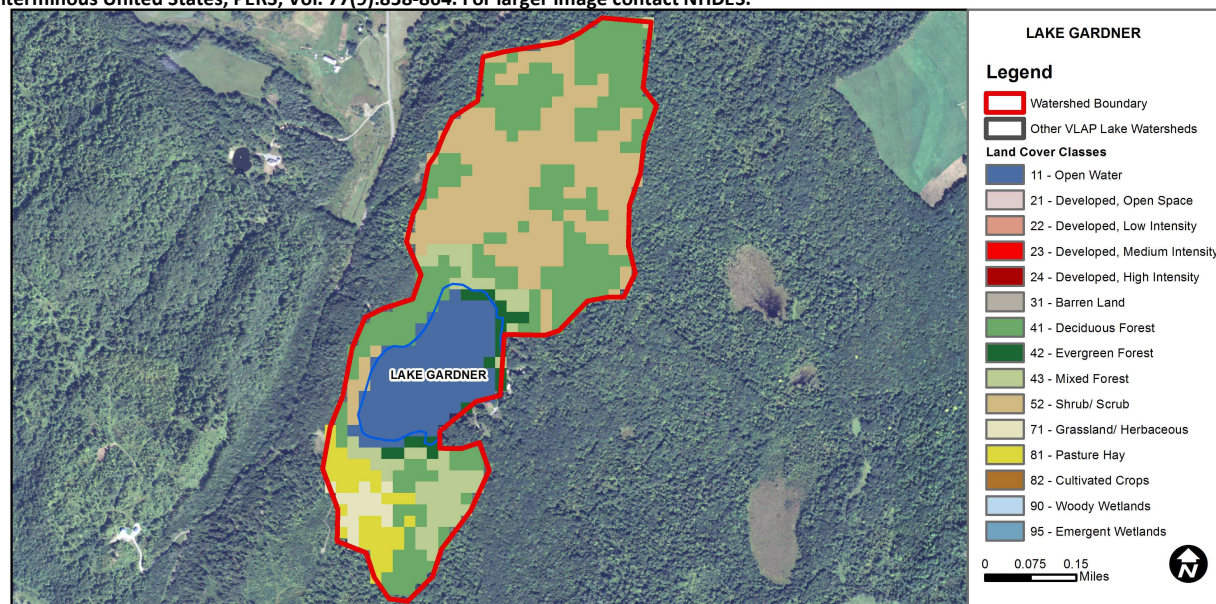
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	<5 samples and median is > threshold. More data needed.
	pH	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Encouraging	< 10 samples and no exceedance of criteria. More data needed.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	15.2	Barren Land	0	Grassland/Herbaceous	2.24
Developed-Open Space	0	Deciduous Forest	35.24	Pasture Hay	5.17
Developed-Low Intensity	0	Evergreen Forest	2.8	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	8.39	Woody Wetlands	0
Developed-High Intensity	0	Shrub-Scrub	31.19	Emergent Wetlands	0



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GARDNER LAKE, BATH, NH

2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- 🔥 **CHLOROPHYLL-A:** Chlorophyll levels were low in June and August and much less than the state median. No cyanobacteria blooms were observed in 2013. Visual inspection of historical data indicates stable chlorophyll levels since monitoring began.
- 🔥 **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity levels were average and approximately equal to the state median. Visual inspection of historical data indicates relatively stable epilimnetic conductivity since monitoring began.
- 🔥 **E. COLI:** Near shore E. coli levels were very low at all stations and much less than state standards for public beaches and surface waters.
- 🔥 **TOTAL PHOSPHORUS:** Epilimnetic and Outlet phosphorus levels were slightly elevated in June and August and greater than the state median. Tributary phosphorus levels were low in June and increased slightly in August. Visual inspection of historical data indicates stable epilimnetic phosphorus since monitoring began.
- 🔥 **TRANSPARENCY:** Transparency was good and the Secchi disk was typically visible on the pond bottom in the absence of weed growth. Visual inspection of historical data indicates stable transparency since monitoring began.
- 🔥 **TURBIDITY:** Epilimnetic turbidity was slightly elevated in June potentially due to pollen noted in the water. Tributary turbidity levels were average for those stations. Vesilind Inlet turbidity was likely high in August, but volunteers filtered the sample to remove sediment. It is unclear if this turbidity was introduced while sampling or if those were natural conditions after significant a storm event prior to sampling.
- 🔥 **pH:** Deep spot and tributary pH levels were sufficient to support aquatic life. Visual inspection of historical data indicates variable epilimnetic phosphorus since monitoring began.
- 🔥 **RECOMMENDED ACTIONS:** Maintain monitoring program to establish baseline water quality data set and better assess seasonal and historical water quality trends. If there is concern about unstable shorelines due to damage from a 2012 microburst, consider re-planting vegetation and implementing erosion control measures to prevent further damage from significant storm events. Keep put the great work!

Station Name	Table 1. 2013 Average Water Quality Data for LAKE GARDNER							
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m	Turb. ntu	pH
						NVS	VS	
O Brooks				1				
Cove				2				
Epilimnion	14.9	2.80	45.2		16	3.19	4.00	1.66
Outlet			40.9		14			1.20
Ricker				0				6.75
Scruggs Inlet			44.0		8			1.11
Shady Lane				0				6.70
Underground Spring			48.9		8			1.27
Valentin				0				6.59
Vesilind Inlet			37.0		10			1.87
Vesilind-Minot				2				6.59

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L

Chlorophyll-a: 4.58 mg/m³

Conductivity: 40.0 uS/cm

Chloride: 4 mg/L

Total Phosphorus: 12 ug/L

Transparency: 3.2 m

pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: < 230 mg/L (chronic)

E. coli: > 88 cts/100 mL – public beach

E. coli: > 406 cts/100 mL – surface waters

Turbidity: > 10 NTU above natural level

pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	N/A	Ten consecutive years of data necessary.	Chlorophyll-a	N/A	Ten consecutive years of data necessary.
Conductivity	N/A	Ten consecutive years of data necessary.	Transparency	N/A	Ten consecutive years of data necessary.
			Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary.

